

an input splitter that splits an input signal into first and second portions; a first signal path for carrying the first portion of the split input signal; a second signal path for carrying the second portion of the split input signal; at least one input phase shifter that realizes a net relative phase shift of approximately 90° between the first and second portions of the split input signal; a carrier amplifier having an output within one of said first signal path and said second signal path; a peaking amplifier having an output within the other of said first signal path and said second signal path; and a quarter wave transformer/combiner circuit connected to the outputs of said carrier amplifier and said peaking amplifier, wherein said circuit realizes a net relative phase shift of approximately 90° between the output of said carrier amplifier and the output of said peaking amplifier so that the outputs are approximately in phase, and wherein said circuit combines the output of said carrier amplifier and the output of said peaking amplifier to form at least one output signal.--

REMARKS

Claims 1-3, 8-10 and 17-19 are pending in present application upon entry of the foregoing Amendment. By this Amendment, claim 1 is amended for reasons not effecting patentability; claims 4-7 and 11-16 are canceled without prejudice or disclaimer as being directed toward a non-elected invention; and new claim 19 is added. In view of the following Remarks, allowance of the pending claims is respectfully requested.

Objection to the Drawings

The Examiner has objected to the drawings as allegedly not showing every feature of the invention specified in the claims. Specifically, the Examiner objected to the drawings for not illustrating the FET embodiment of claim 3 and the integrated circuit embodiment of claim 17. With regard to the objection corresponding to the FET

embodiment of claim 3, Applicant has amended Figure 1 of the drawings in accordance with 37 C.F.R. 1.83(a) which states "conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g., a labeled rectangular box)." Applicant submits that the representation of transistors 114 and 122 as labeled rectangular boxes in amended Figure 1 fully complies with the drawing requirements as the detailed illustration of bipolar junction transistors and field effect transistors is not essential for a proper understanding of the invention. Accordingly, Applicant respectfully requests that the Examiner withdraw this objection to the drawings.

With regard to the objection corresponding to the integrated circuit embodiment of claim 17, Applicant submits that additional illustration the features of claim 1 implemented as an RF integrated circuit as recited in claim 17 is not essential for a proper understanding of the invention. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw this objection to the drawings.

Rejection of Claims Under 35 U.S.C. § 102(e)

The Examiner has rejected claims 1-3, 8-10 and 17-18 under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,262,629 to Stengel *et al.* ("Stengel"). Applicant respectfully traverses this rejection.

Claims 1 and 10 recite, in pertinent part:

a quarter wave transformer/combiner circuit/means (1/10) ***coupled directly to the outputs*** of the carrier and peaking amplifier/amplifier means (1/10)...

Stengel does not disclose, teach or suggest this feature of the claimed invention. In particular, Figure 1 of Stengel discloses that the quarter wave element 136 is coupled to matching network 122 rather than directly to the output of carrier amplifier 112. Stengel further discloses that the quarter wave element 136 is coupled to matching network 124 rather than directly to the output of peaking amplifier 116. Thus, Applicant

submits that claims 1 and 10 are patentable over Stengel. Accordingly, Applicant respectfully requests that the Examiner withdraw this rejection of claims 1 and 10.

Claims 2, 3, 8, 9, 17 and 18 depend from and add additional features to claim 1. As such, Applicant submits that these claims are patentable over Stengel for at least the reasons set forth above with regard to claim 1. Accordingly, Applicant respectfully requests that the Examiner withdraw this rejection of these claims.

Rejection of Claims Under 35 U.S.C. § 103(a)

The Examiner has rejected claims 1-3, 9-10 and 18 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,757,229 to Mitzlaff ("Mitzlaff"). Applicant respectfully traverses this rejection.

Mitzlaff teaches combining the outputs of a carrier amplifier and a peaking amplifier using a quarter wave transmission line. A quarter wave transmission line is not practically implemented within an RF integrated circuit. As such, the quarter wave transmission line of Mitzlaff does not and can not teach or suggest Applicant's quarter wave transformer/combining circuit of claim 1 or Applicant's quarter wave transformer/combining means of claim 10. Thus, for at least this reason, claims 1 and 10 are patentable over Mitzlaff. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw this rejection of claims 1 and 10.

Claims 2, 3, 9, and 18 depend from and add additional features to claim 1. As such, Applicant submits that these claims are patentable over Mitzlaff for at least the reasons set forth above with regard to claim 1. Accordingly, Applicant respectfully requests that the Examiner withdraw this rejection of these claims.

Conclusion

Applicant believes that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

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Respectfully submitted,



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APPENDIX

Please find marked-up versions of the claims identifying insertions and [deletions].

1. (Once Amended) A Doherty amplifier system comprising:

an input splitter for splitting an input signal into first and second portions [portions];

first and second signal paths for carrying respectively the first and second portions of the input signal;

one or more input phase shifters for realizing a net relative phase shift of approximately 90° between signals carried on the first and second signal paths;

a carrier amplifier having an output situated along a selected one of the first and second paths;

a peaking amplifier having an output situated along one of the first and second signal paths other than the selected one; and

a quarter wave transformer/combiner circuit coupled directly to the outputs of the carrier and peaking amplifiers for realizing a net relative phase shift of approximately 90° between the amplifier outputs so the two are approximately in-phase, and combining the two to form one or more output signals.